

WHAT IS CLAIMED IS:

1. A composition comprising a plurality of sets of nucleic acid molecules, each set of nucleic acid molecules encoding a different type of cytomegalovirus (CMV) polypeptide, and each molecule of a set encoding the same type of CMV polypeptide, wherein one or more sets of the plurality encodes a CMV polypeptide that induces a neutralizing antibody response, and one or more sets of the plurality encodes a CMV polypeptide that induces a cell-mediated immune response.
2. The composition of claim 1, wherein the nucleic acid molecules comprise DNA plasmids.
3. The composition of claim 1, wherein the CMV polypeptides are human CMV (HCMV) polypeptides.
4. The composition of claim 1, wherein the CMV polypeptides that induce an antibody response are selected from the group consisting of glycoprotein B, glycoprotein complex II, and glycoprotein complex III, and antigenic fragments thereof.
5. The composition of claim 1, wherein the CMV polypeptides that induce an antibody response comprise glycoprotein B and glycoprotein complex II, or antigenic fragments thereof.
6. The composition of claim 1, wherein the CMV polypeptides that induce a cell-mediated immune response are selected from the group consisting of phosphoprotein pp65 (pp65), phosphoprotein pp150 (pp150), and antigenic fragments thereof.
7. A composition comprising a plurality of sets of nucleic acid molecules, each set encoding a different type of human cytomegalovirus (HCMV) polypeptide that induces a neutralizing antibody response, and each nucleic acid molecule of a set encoding the same type of HCMV polypeptide.
8. The composition of claim 7, wherein the CMV polypeptides that induce an antibody response consist of glycoprotein B and glycoprotein complex II, or antigenic fragments thereof.
9. A composition comprising a plurality of sets of nucleic acid molecules, each set encoding a different type of human cytomegalovirus (HCMV) polypeptide that induces a cell-

mediated immune response, and each nucleic acid molecule of a set encoding the same type of HCMV polypeptide.

10. The composition of claim 9, wherein the polypeptides that induce a cell-mediated response comprises pp65 and pp150.
11. The composition of claim 7, wherein the polypeptides that induce a neutralizing antibody response are selected from the group consisting of glycoprotein B, gM, gN, a combination of gM and gN (glycoprotein complex II; gcII), and a combination of gH, gL, and gO (glycoprotein complex III; gcIII) of HCMV, and antigenic fragments thereof.
12. The composition of claim 9, wherein the polypeptides that induce a cell-mediated immunity response comprise phosphoprotein 65, phosphoprotein 150, both phosphoprotein 65 and phosphoprotein 150, or antigenic fragments thereof.
13. The composition of claim 7, wherein the polypeptides that induce a neutralizing antibody response comprise gcII or antigenic fragments thereof.
14. The composition of claim 7, wherein the polypeptides that induce a neutralizing antibody response comprise gcIII or antigenic fragments thereof.
15. The composition of claim 7, wherein the polypeptides that induce a neutralizing antibody response comprise gB and gcII or antigenic fragments thereof.
16. The composition of claim 7, wherein the polypeptides that induce a neutralizing antibody response consist of gB and gcIII or antigenic fragments thereof.
17. A pharmaceutical composition that elicits an immune response against human cytomegalovirus (HCMV) comprising the composition of claim 1 and a pharmaceutically acceptable carrier.
18. A pharmaceutical composition that elicits an immune response against human cytomegalovirus (HCMV) comprising the composition of claim 7 and a pharmaceutically acceptable carrier.
19. A pharmaceutical composition that elicits an immune response against human cytomegalovirus (HCMV) comprising the composition of claim 9 and a pharmaceutically acceptable carrier.

20. A method of eliciting an immune response against human cytomegalovirus (HCMV) in a subject, the method comprising administering to the subject an amount of a pharmaceutical composition of claim 17 effective to elicit an immune response against HCMV in the subject.
21. The method of claim 20, wherein administration is by needle injection, needle-less jet injection, gene gun, topical administration, surgical administration, or mucosal administration.
22. The method of claim 20, wherein the subject is a non-human mammal or a human.
23. The method of claim 22, wherein the human is sero-negative for HCMV.
24. The method of claim 23, wherein the sero-negative human is selected from the group consisting of a female between the ages of eleven and forty, a female contemplating pregnancy, a pregnant female, an HIV-infected individual, a future organ transplant recipient, and a future bone marrow donor.
25. The method of claim 22, wherein the human is sero-positive for HCMV.
26. A kit comprising the composition of claim 1 and instructions for administration of the composition to a subject in an amount effective to treat a CMV infection.
27. The kit of claim 26, wherein the amount is effective to inhibit a future CMV infection.
28. The kit of claim 26, wherein the amount is effective to treat an existing CMV infection.
29. The kit of claim 26, wherein the composition comprises DNA plasmids.
30. A kit comprising the composition of claim 7 and instructions for administration of the composition to a subject in an amount effective to treat a CMV infection.
31. A kit comprising the composition of claim 9 and instructions for administration of the composition to a subject in an amount effective to treat a CMV infection.